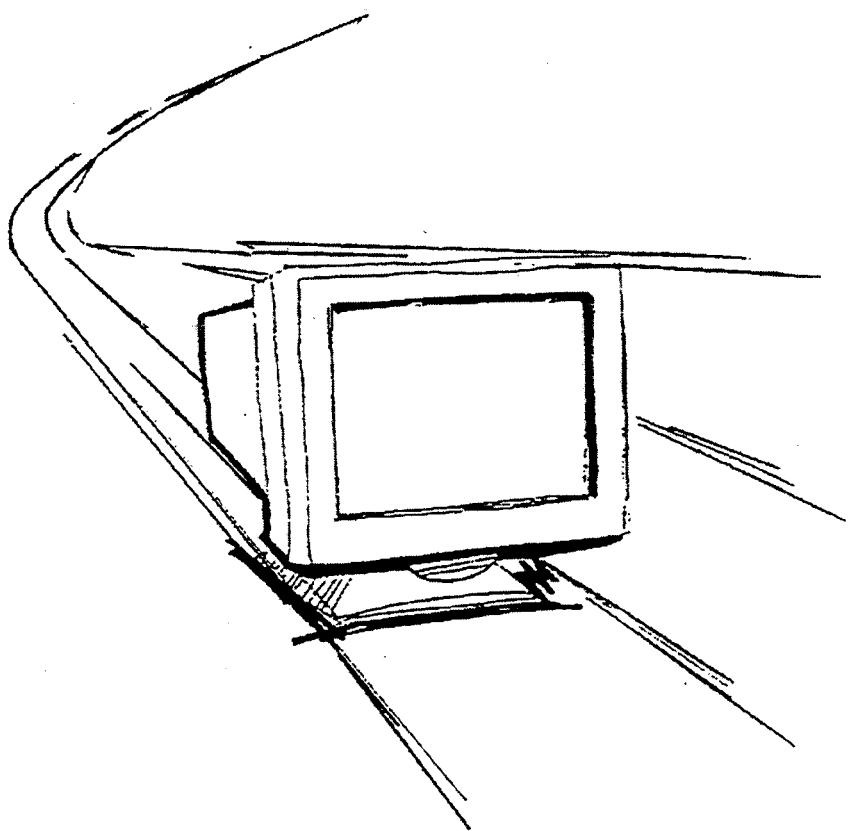


1451C/CLR

# TROUBLESHOOTING

## GUIDE



CTX

The Monitor Specialists

EDITION 1  
July 1995

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## 1.0 IMPORTANT NOTICE & INTRODUCTION

### IMPORTANT NOTICE

Please read before attempting service

1. While the monitor is in operation, do not attempt to connect or disconnect any wires.
2. Make sure the power cord is disconnected before replacing any parts in the monitor.
3. When the power is on, do not attempt to short any portion of the circuit. This shorting may cause damage to the transistors in the monitor.
4. When servicing the H.V. area, be certain that the C.R.T anode is safely discharged before removing the anode cap.
5. Caution must be exercised when servicing this monitor.

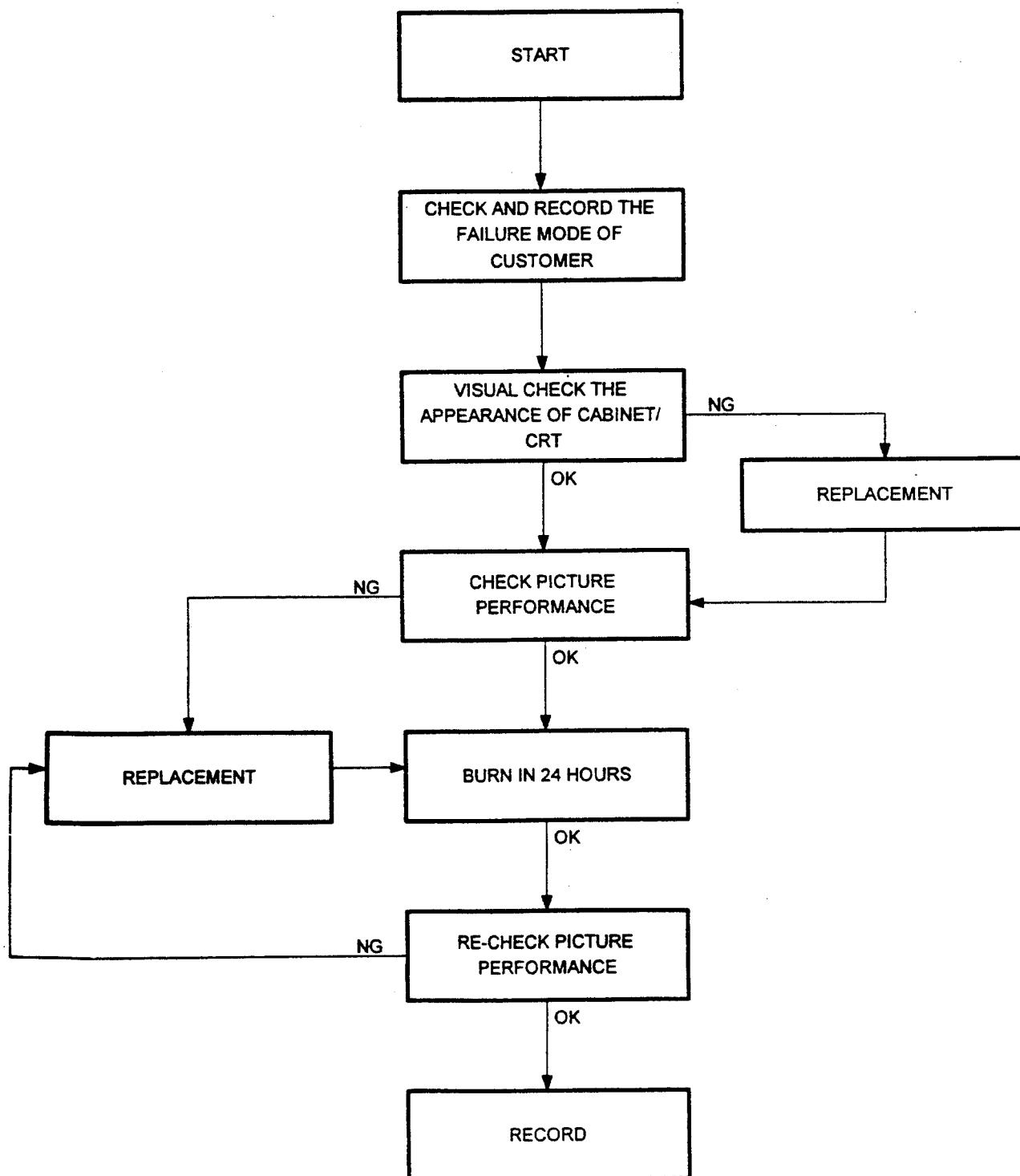
### INTRODUCTION

#### Enhanced repair capabilities

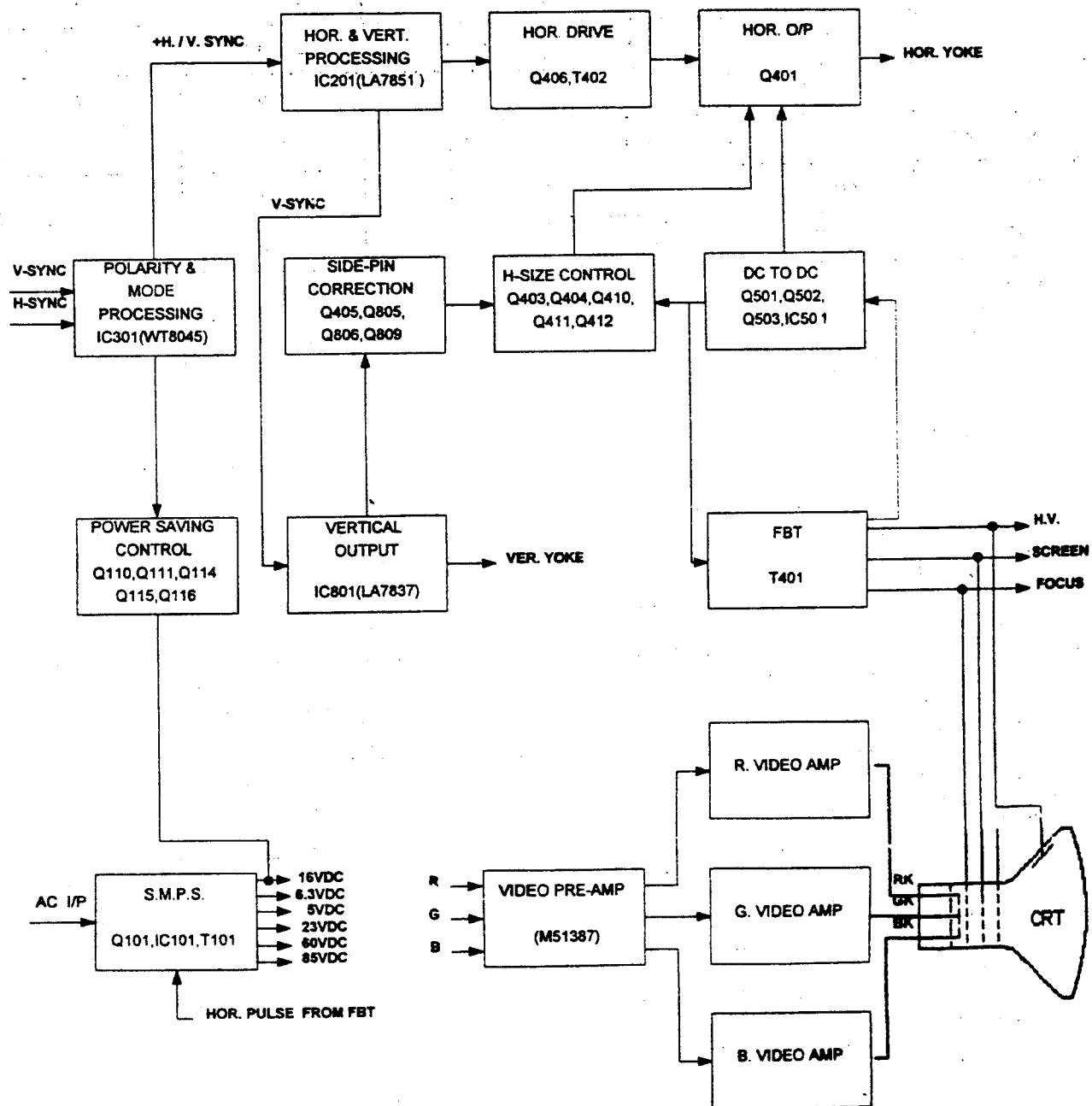
This troubleshooting guide is edited for model 1451C/CLR when service is necessary. There are four primary parts included in this troubleshooting guide which offer the easiest way to locate problem points and repair the machine to the best possible condition.

1. The Adjustment section offers the adjustable method, steps and all data of the factory's initial settings which can make the machine get the best performance at that time. By the way, before adjusting, the machine must be warmed up for at least 10 minutes and the CRT face must be in an eastward direction.
2. The Troubleshooting section has four main parts including: power supply, power saving, CRT, deflection & video circuit. Each offers fast repair routine and the IC, transistor voltage records against all specified signal modes. These voltage readings are measured with a HP 34401A multimeter with input impedance  $10M\ \Omega$  ( $0.1V \sim 1000V$  range) and waveforms shown on circuit schematics are measured by a Tektronix TDS 520 digital oscilloscope, the monitor receives VGA-400 full white square pattern.

3. The CRT contrast list offers repairmen / technicians the contrast data when CRT replacement is necessary from a different type of CRT.
4. The Spare parts list offers the CTX part number (P/N) which is used frequently by repairmen / technicians. For details please refer to the service guide or service manual. If there is any engineering change regarding this model, CTX will issue the updated information by a non-periodical Technical Bulletin.

**2.0 GENERAL MAINTENANCE PROCEDURE**

## 3.0 FUNCTION BLOCK DIAGRAM BLOCK



## 4.0 TIMING MODE

NAME	VGA-350		VGA-400		VGA-480		SVGA I		SVGA II	
PIXEL RATE	25.2 MHZ		25.2 MHZ		25.2 MHZ		36 MHZ		40 MHZ	
Fh	31.5 KHZ		31.5 KHZ		31.5 KHZ		35.156KHZ		37.879 KHZ	
Fv	70 HZ		70 HZ		60 HZ		56.250HZ		60.3165 HZ	
INTERLACE MODE	NO		NO		NO		NO		NO	
OUTPUT	ANALOG		ANALOG		ANALOG		ANALOG		ANALOG	
FULL SCALE Vpp	1,000		1,000		1,000		1,000		1,000	
SYNC ON R/G/B	NO		NO		NO		NO		NO	
CONTROL BITS	0000 0000		0000 0000		0000 0000		0000 0000		0000 0000	
UNIT	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us
FRAME BORDER-H		us		us		us		us		us
FRAME BORDER-V		ms		ms		ms		ms		ms
H TOTAL	800	31.78 us	800	31.78 us	800	31.78 us	1024	28.444 us	1056	26.4 us
H DISPLAY	641	25.42 us	641	25.42 us	641	25.42 us	800	2.222 us	800	20.0 us
H REAR PORCH	48	1.91 us	48	1.91 us	48	1.91 us	128	3.556 us	88	2.2 us
H SYNC WIDTH	96	3.81 us	96	3.81 us	96	3.81 us	72	2.0 us	128	3.2 us
H SYNC POLARITY	+		-		-		-		+	
VTOTAL	450	14.27 ms	450	14.27 ms	525	16.68 ms	625	17.778 ms	628	16.579 ms
V DISPLAY	350	11.12 ms	400	12.71 ms	480	15.25 ms	600	17.067 ms	600	15.840 ms
V REAR PORCH	60	1.91 ms	35	1.11 ms	33	1.05 ms	22	0.626 ms	23	0.607 ms
V SYNC WIDTH	2	0.06 ms	2	0.06 ms	2	0.06 ms	2	0.057 ms	4	0.106 ms
V SYNC POLARITY	-		+		-		-		+	
EQUALIZATION ?	NO		NO		NO		NO		NO	
SERRATION ?	NO		NO		NO		NO		NO	
COMP SYNC POLARITY	-		-		-		-		-	

NAME	SVGA III		VESA-480		8514A		8514NI	
PIXEL RATE	50 MHZ		31.5 MHZ		44.9 MHZ		65 MHZ	
F <sub>h</sub>	48.077 KHZ		37.860 KHZ		35.5 KHZ		48.363 KHZ	
F <sub>v</sub>	72.187 HZ		72.809 HZ		87 HZ		60 HZ	
INTERLACE MODE	NO		NO		VIDEO		NO	
OUTPUT	ANALOG		ANALOG		ANALOG		ANALOG	
FULL SCALE V <sub>pp</sub>	1,000		1,000		1,000		1,000	
SYNC ON R/G/B	NO		NO		NO		NO	
CONTROL BITS	0000 0000		0000 0000		0000 0000		0000 0000	
UNIT	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us	PIXEL	ms/us
FRAME BORDER-H		us		us		us		us
FRAME BORDER-V		ms		ms		ms		ms
H TOTAL	1040	20.80 us	832	26.413 us	1264	28.10 us	1344	20.677 us
H DISPLAY	800	16.0 us	640	20.317 us	1024	22.80 us	1024	15.754 us
H REAR PORCH	64	1.28 us	128	4.063 us	52	1.15 us	160	2.462 us
H SYNC WIDTH	120	2.40 us	40	1.270 us	176	3.91 us	136	2.092 us
H SYNC POLARITY	+		-		+		-	
VTOTAL	666	13.853 ms	520	13.735 ms	408	11.50 ms	806	16.667 ms
V DISPLAY	600	12.480 ms	480	12.678 ms	384	10.80 ms	768	15.880 ms
V REAR PORCH	23	0.478 ms	28	0.740 ms	20	0.56 ms	29	0.600 ms
V SYNC WIDTH	6	0.125 ms	3	0.079 ms	4	0.11 ms	6	0.124 ms
V SYNC POLARITY	+		-		+		-	
EQUALIZATION ?	NO		NO		NO		NO	
SERRATION ?	NO		NO		NO		NO	
COMP SYNC POLARITY	-		-		-		-	

## 5.0 ADJUSTMENT

### 5.1 1451C ADJUSTMENT

- **voltage adjustment: VR101/SVGA II**

1. Use SVGA II timing for input signal.
2. Attach the multimeter (with a DC voltage range of 200V) between cathod of D111 and GND, and adjust VR101 to get  $85V \pm 0.2V$ .

- **H-F/V adjustment: VR301/SVGA (37.8KHz)**

Measure the DC voltage between TP3 and GND, and adjust VR301 to get  $9V \pm 0.05V$ .

- **Hi-voltage adjustment: VR501 / SVGA II**

- a. Turn the power switch off before attaching multimeter with a high voltage probe by a factor 1000:1 between CRT anode and GND.
- b. Adjust VR501 to make sure the measurement readings are  $24V \pm 0.5V$  (ie CRT anode voltage is  $24KV \pm 0.5KV$ ).

- **Horizontal hold adjustment: VR201/SVGA**

Connect TP1 to GND and adjust VR201 to get picture stand or scroll toward left or right slowly when input is SVGA II.

- **H-PHASE adjustment: EXT VR(VR202) / VGA-480**

Adjust EXTERNAL H-PHASE to shift picture to the center of screen.

- **V-line adjustment: VR801/VGA-480**

First adjust V-CENTER EXTERNAL VR to make picture to the V-center of the screen, and then adjust VR801 to correct the V-linearity of crossh-hatch pattern.

- **H-WIDTH adjustment VR401/VGA-480**

- a. Adjust EXTERNAL H-WIDTH VR to get picture width just full screen.
- b. Adjust EXTERNAL H-WIDTH VR to get the horizontal width of every mode is  $252 \pm 5mm$ .

- **V-SIZE adjustment: EXT VR**

Adjust EXTERNAL V-SIZE VR to get the vertical size of every mode is  $189 \pm 7mm$ .

- **PINCUSHION adjustment: VR803/VGA-480**

Adjust VR803 to parallel the picture's right & left edge each other.

- **FOCUS adjustment: FOCUS VR/VGA-480**

Adjust FOCUS VR on the FBT to attain a balanced focus for all points on the screen.

- **White balance adjustment:**

a. Pre adj. & brightness settings (Before adjusting, CRT must be degaussed.)

(1) Set the VR601,602,603,604,605,606 on mechanical center, and the Brightness VR to the click point, the Contrast VR to Max.

(2) Operating on VGA-480 mosaic pattern and adjust the SCREEN VR to set the raster luminance between 2 ~ 3FL, are measure by color Analyzer.

(3) Adjust VR604,605,606 (BIAS VR) to make C.I.E. coordinates value as  $x=0.281 \pm 0.01$ ,  $y=0.311 \pm 0.01$  are measured by color analyzer.

(4) Change timing to VGA-400 color bar pattern, correct SCREEN VR which on the FBT to make raster brightness disappear and the "1" row of color bar pattern (as below figure) visible obscurely.

(5) Operating on VGA-480 mosaic pattern again, check the Brightness of Mosaic pattern is between 67 ~ 70FL. If the brightness isn't net, adjust VR603, to make it and return to step(2).

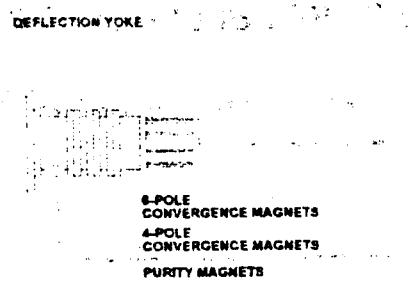
Brightness	R+B			B+G		R+G		7
	BRIGHT BLUE	BRIGHT RED	BRIGHT PURPLE	GREEN	BLUE + GREEN	RED + YELLOW	WHITE	
15								6
14								5
13								4
reduce	12							3
	11							2 →visible
	10							1 →visible
	9							0 obscurely
↓	8							

## b. White balance fine regulation:

- (1) Receive VGA-480 timing, full white square pattern.
- (2) Adjust BRIT. VR. to MIN., CONT. VR. to MAX..
- (3) Adjust VR601,602,603 to make  $x=0.281 \pm 0.01$ ,  $y=0.311 \pm 0.01$ , are measured by color Analyzer.
- (4) Change the BRIT. VR to the click point and the CONT. VR between 1 ~ 2FL, then adjust VR604,605,606 (BIAS VR) to get  $X=0.281 \pm 0.005$ ,  $Y=0.311 \pm 0.005$ , are measured by color Analyzer.
- (5) If the white balance is not met, repeat step (2) ~ (4).

## • ADJUSTMENT FOR CONVERGENCE

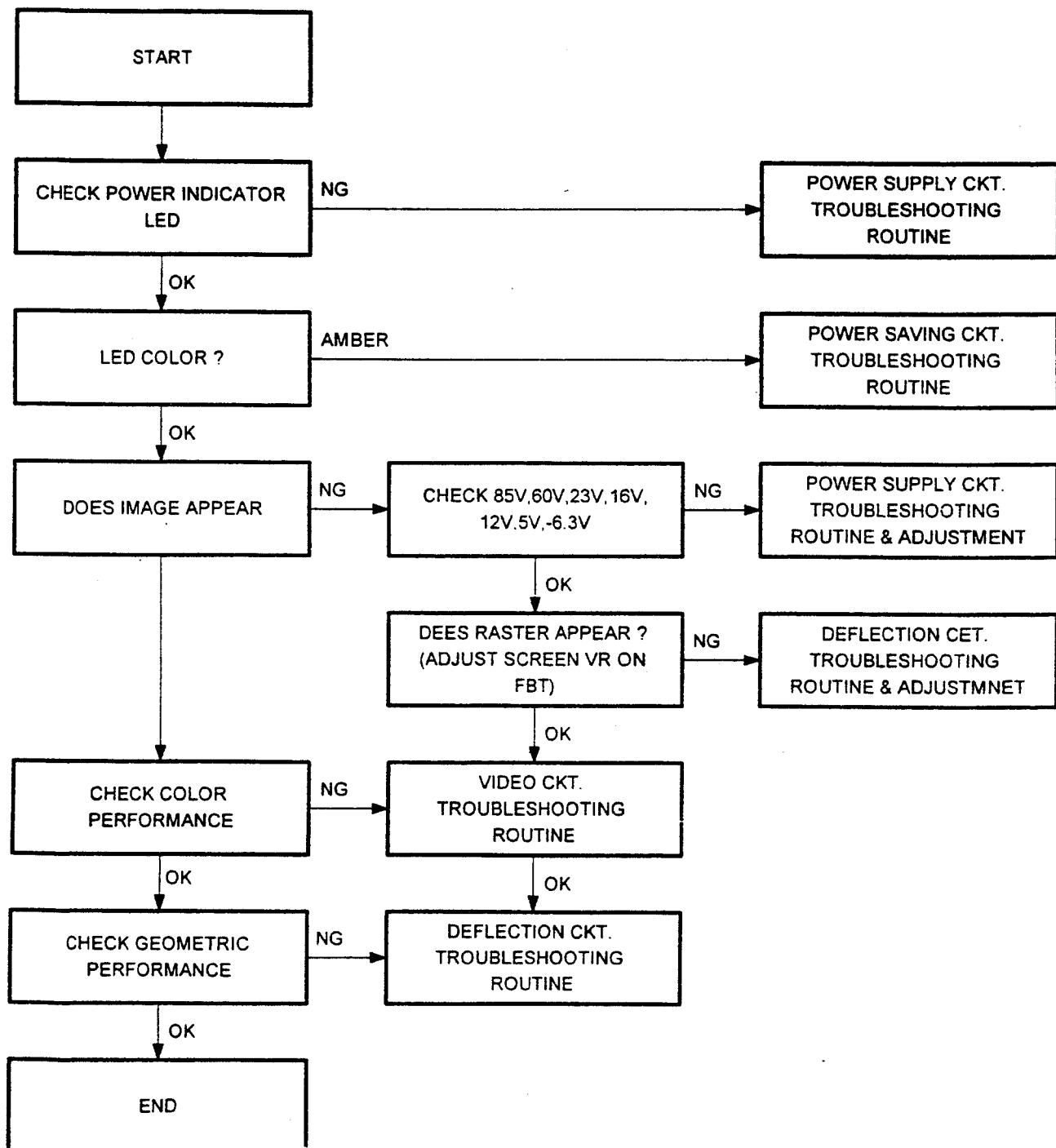
- (1) Produce a magenta crosshatch on the display.
- (2) Adjust the focus for the best overall focus on the screen.
- (3) Also adjust the brightness to the desired condition.
- (4) Vertical red and blue lines are converged by varying the angle between the two tabs of the 4 pole magnets on the PCM assembly. (See diagram below)
- (5) Horizontal red and blue lines are converged by moving the two tabs at the same time keeping the angle between them constant.
- (6) Produce a white crosshatch pattern on the display.
- (7) Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.
- (8) Horizontal green and magenta lines are converged by moving the two tabs at the same time, keeping the angle between them constant.



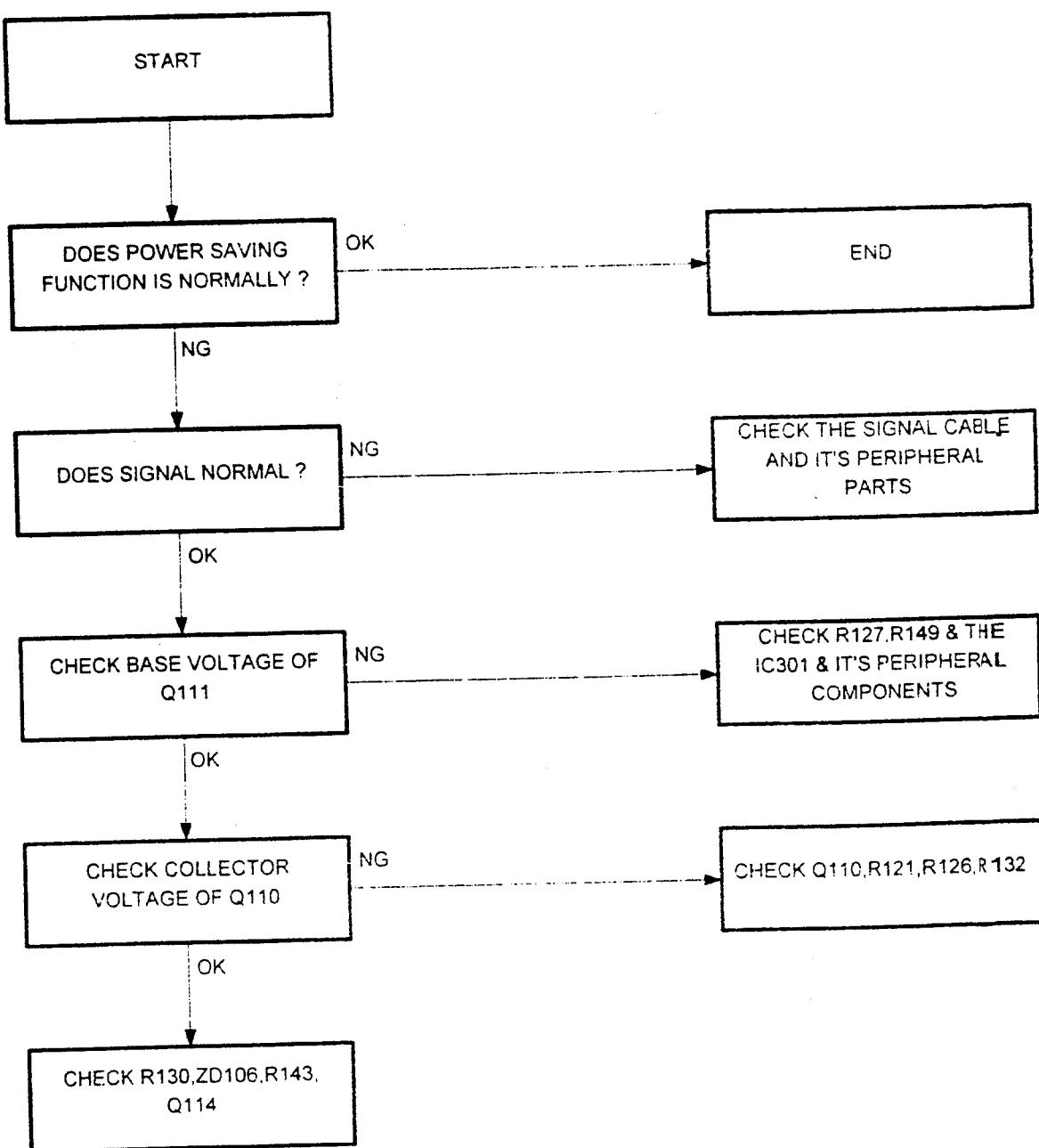
Note: Please don't adjust the purity magnets when service occurs.

## 6.0 TROUBLESHOOTING

### 6.1 MAIN TROUBLESHOOTING ROUTINE



## 6.2 POWER SAVING CIRCUIT TROUBLESHOOTING ROUTINE



## 6.0 TROUBLESHOOTING

1451C/CLR

### VOLTAGE MEASURED RECORD

TEST CONDITIONS: AC LINE IN:110V,220V/60Hz

TIMING : VGA-350

PATTERN: CROSS HATCH

STATUS : NORMAL

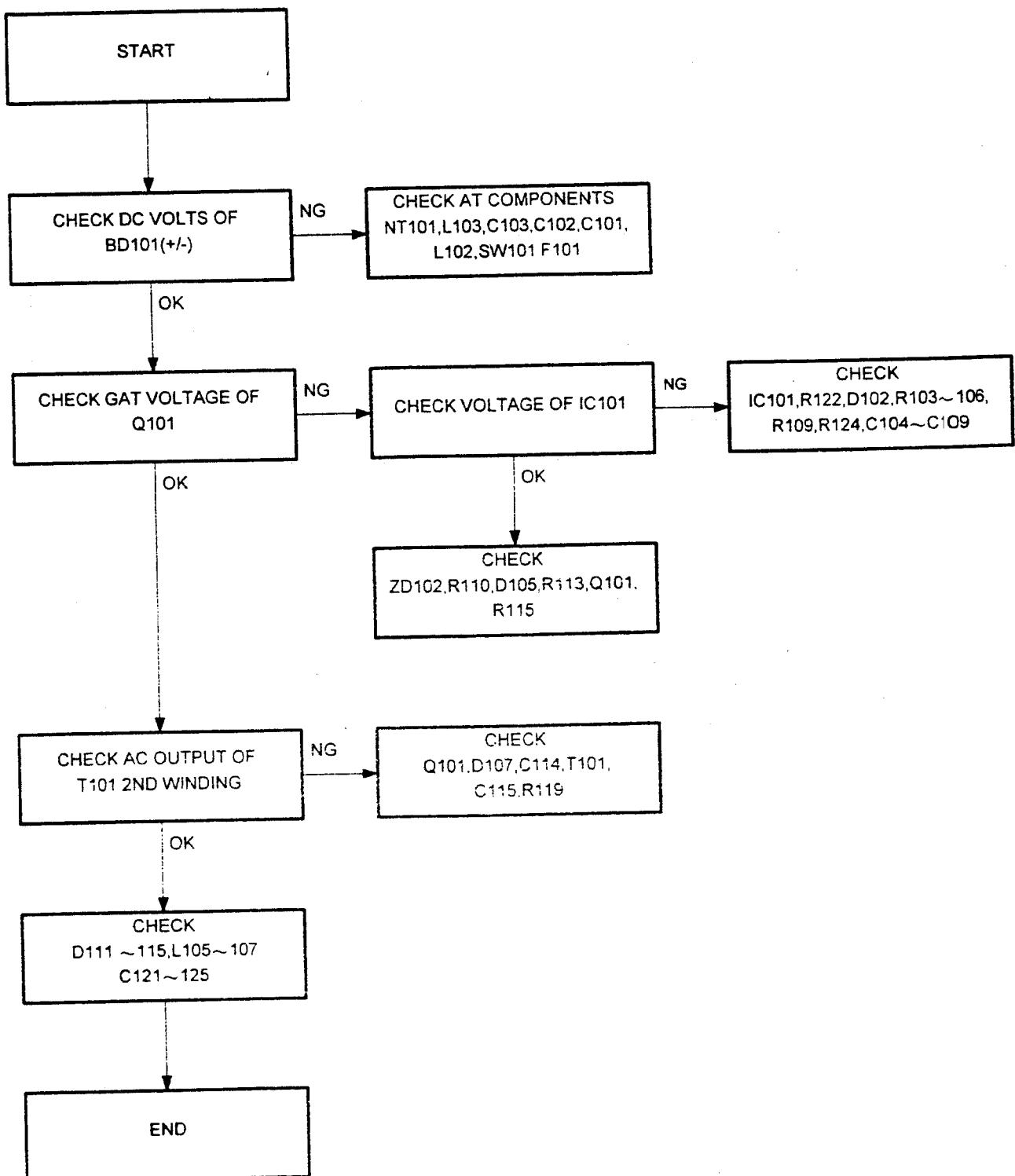
### VOLTAGE MEASURED RECORD

Unit: Volt

TR	Q110 (B772)			Q111 (2SC945)			Q114 (2SD882)		
PIN MODE	B	C	E	B	C	E	B	C	E
NORMAL	22.64	23.32	23.35	0.73	0.03	GND	12.99	15.04	12.34
POWER SAVING	27.36	1.19	27.34	0.01	27.38	GND	1.17	14.14	0.63

TR	Q115 (2SC945)			Q116 (2SA733)			IC301 (8045)		
PIN MODE	B	C	E	B	C	E	14 (PM1)	15 (PM2)	
NORMAL	6.79	12.99	6.16	9.34	0.33	6.3	3.12	3.12	
POWER SAVING	0.35	1.17	0.63	3.03	3.65	3.73	0.0	0.0	

## 6.3 POWER SUPPLY CIRCUIT TROUBLESHOOTING ROUTINE



## VOLTAGE MEASURED RECORD

TEST CONDITIONS: AC LINE IN:110V,220V/60Hz

TIMING : VGA-350

PATTERN: CROSS HATCH

STATUS : NORMAL

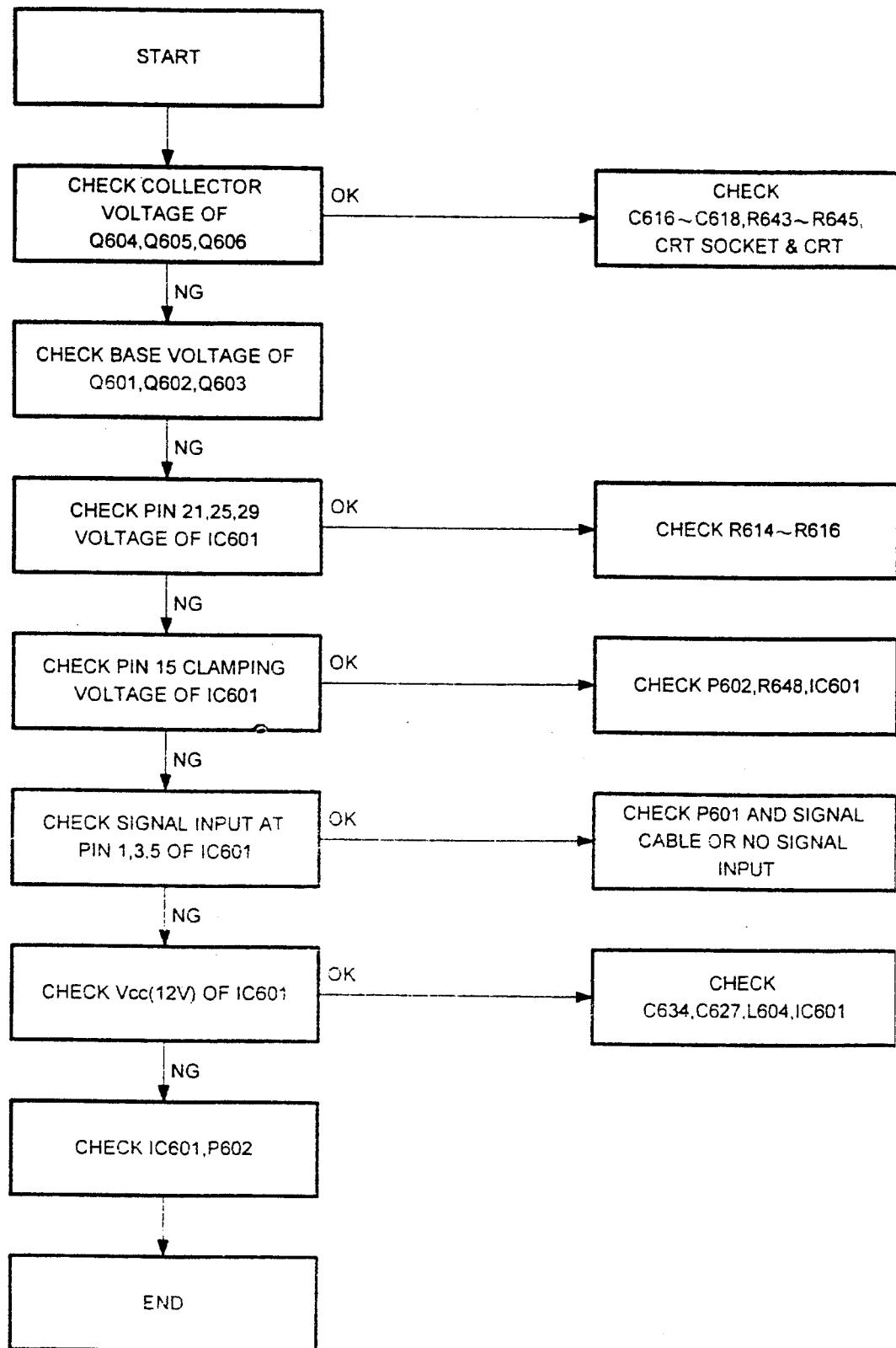
## VOLTAGE MEASURED RECORD

Unit: Volt

TR	Q101 (2SK1118)		
PIN	G	D	S
MODE			
110V	3.2	143.0	0.07
220V	1.25	302.65	0.03

IC	IC101 (3842N)								
PIN	1	2	3	4	5	6	7	8	
MODE									
110V	2.89	2.48	0.22	0.48	GND	3.82	16.88	4.98	
220V	3.72	2.47	0.35	0.52	GND	1.75	16.84	4.98	

## 6.4 VIDEO CIRCUIT TROUBLESHOOTING ROUTINE



## 6.0 TROUBLESHOOTING

1451C/CLR

The following voltage records was measured with cross-hatch pattern.

Transistor & Integration circuit

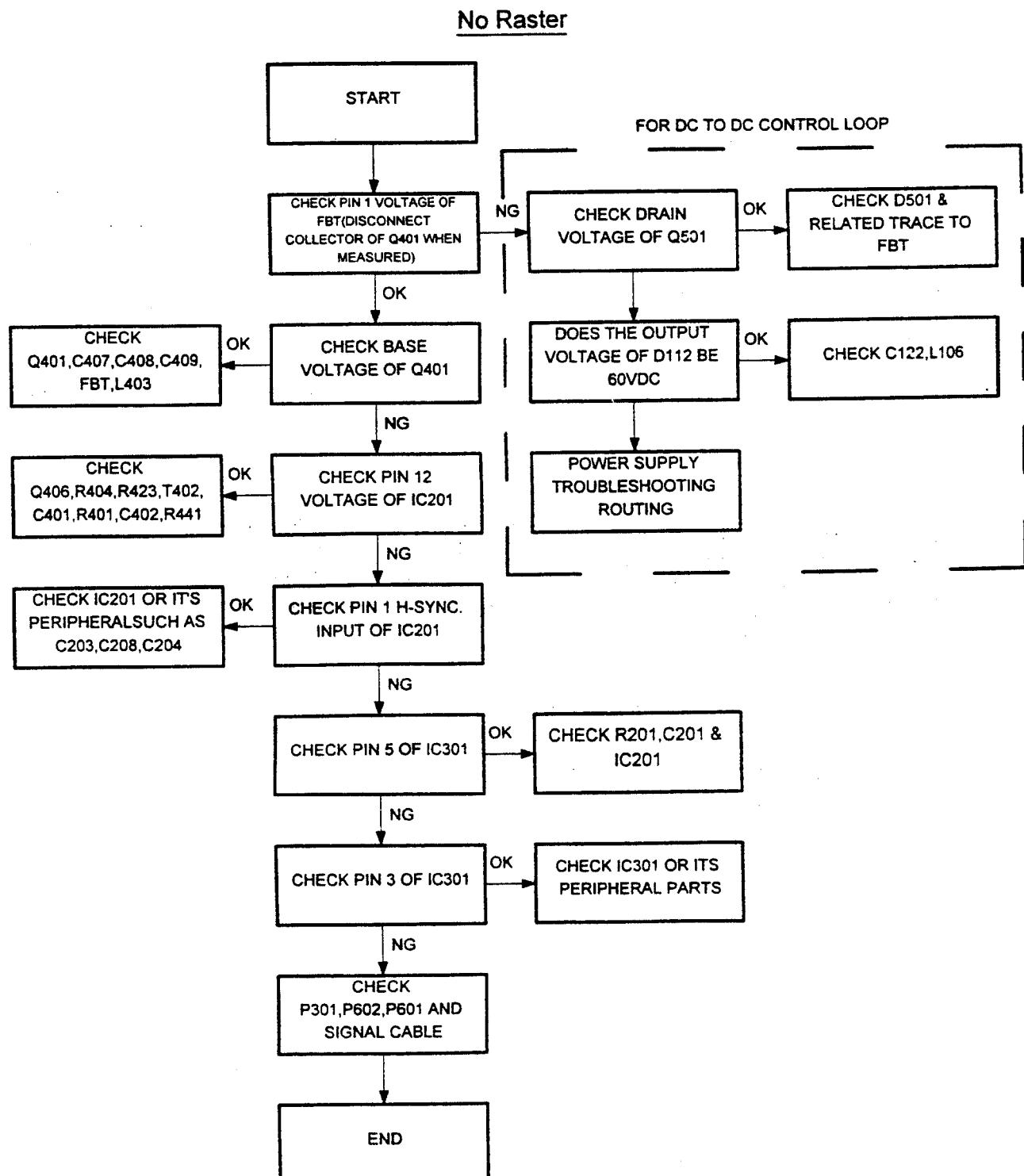
TR	Q601 (PH2369)			Q602 (PH2369)			Q603 (PH2369)		
PIN	B	C	E	B	C	E	B	C	E
VGA-350	1.66	9.44	1.61	1.66	9.45	1.61	1.67	9.43	1.60

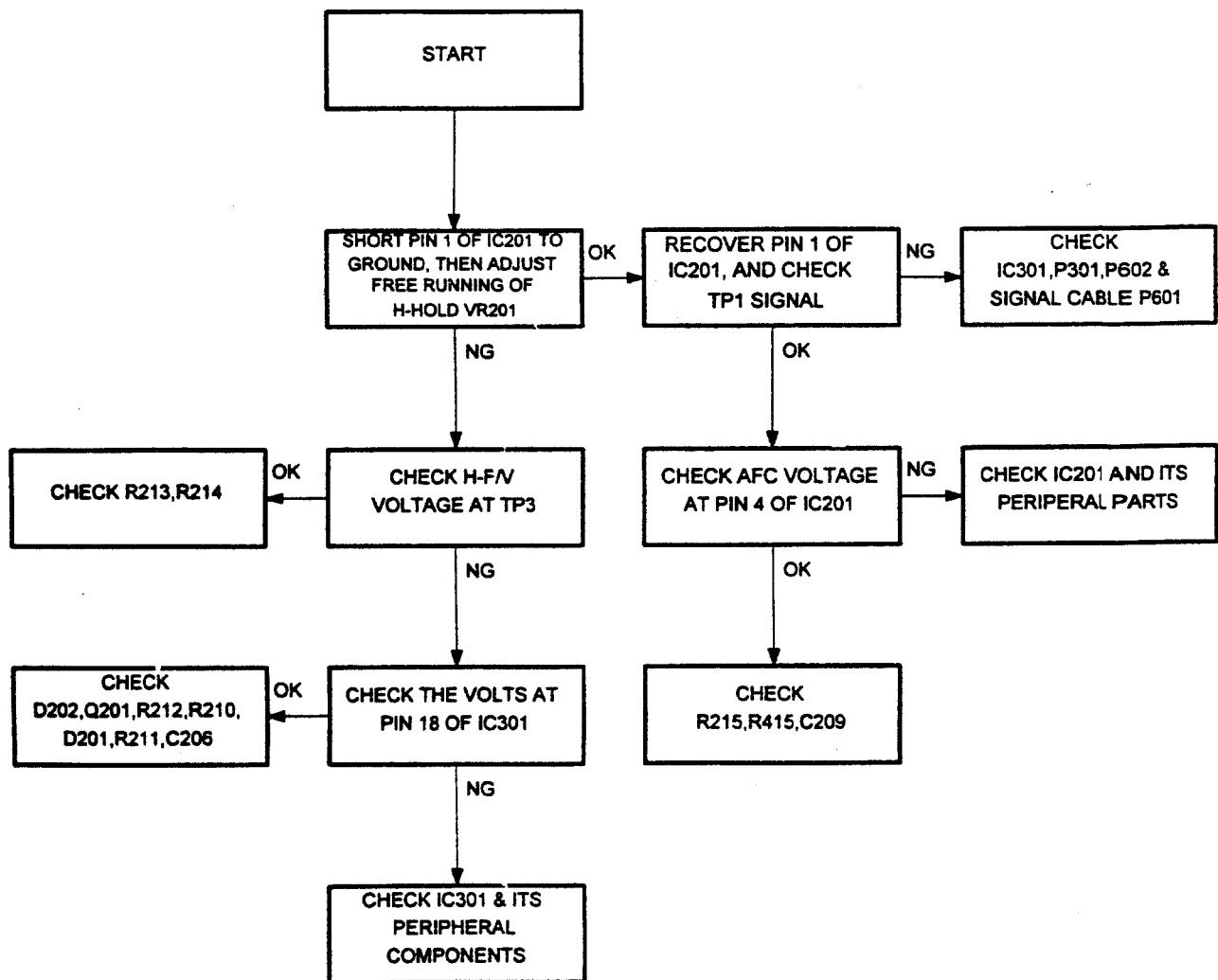
TR	Q604 (2SC3788)			Q605 (2SC3788)			Q606 (2SC3788)		
PIN	B	C	E	B	C	E	B	C	E
VGA-350	10.06	74.22	9.44	10.06	74.24	9.45	10.07	74.43	9.43

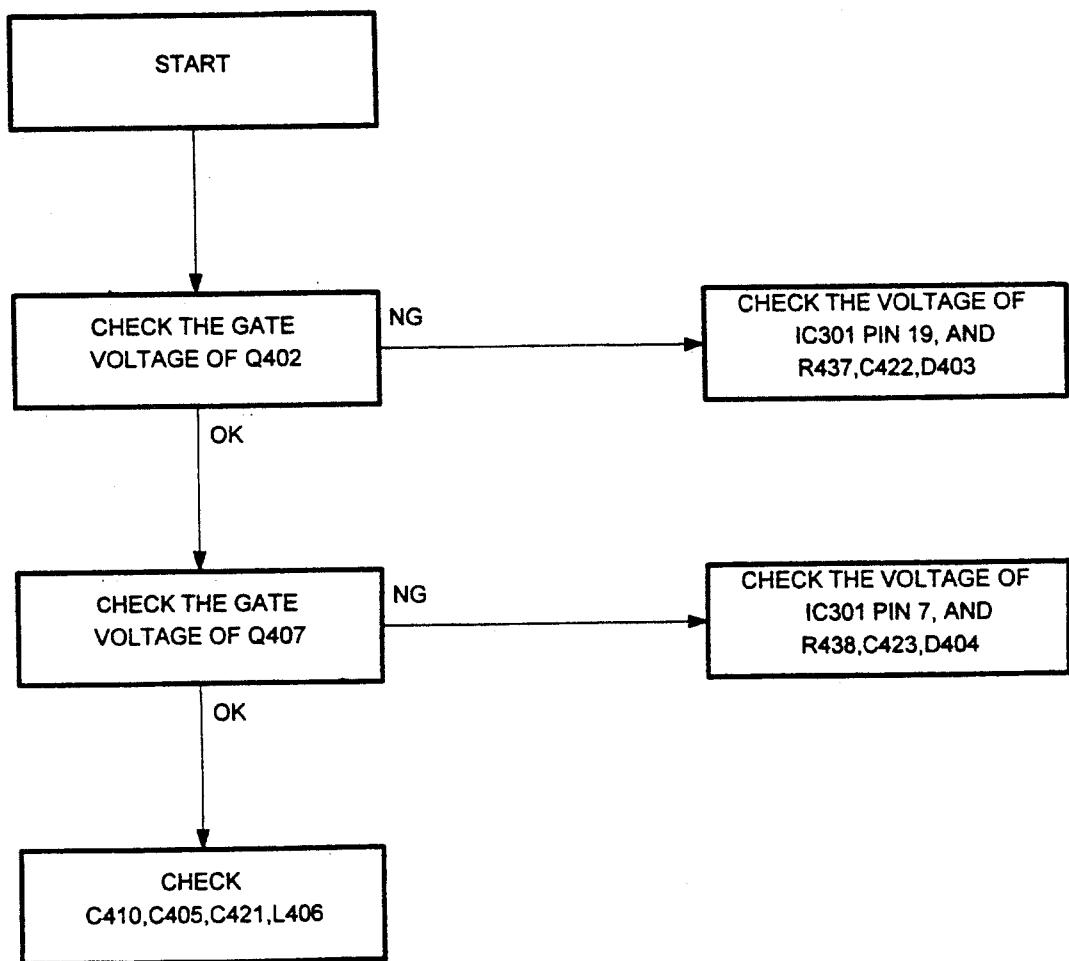
IC	IC601 (M51387P)									
PIN	2	3	4	6	7	8	10	11	12	
VGA-350	12.27	2.74	5.0	12.27	2.73	5.03	12.27	2.74	5.23	
PIN	14	15	16	17	18	19	20	21	22	
VGA-350	6.76	0.47	3.34	GND	GND	3.51	4.28	1.67	GND	
PIN	23	24	25	26	27	28	29	30		
VGA-350	3.5	4.29	1.66	GND	3.47	4.27	1.65	12.27		

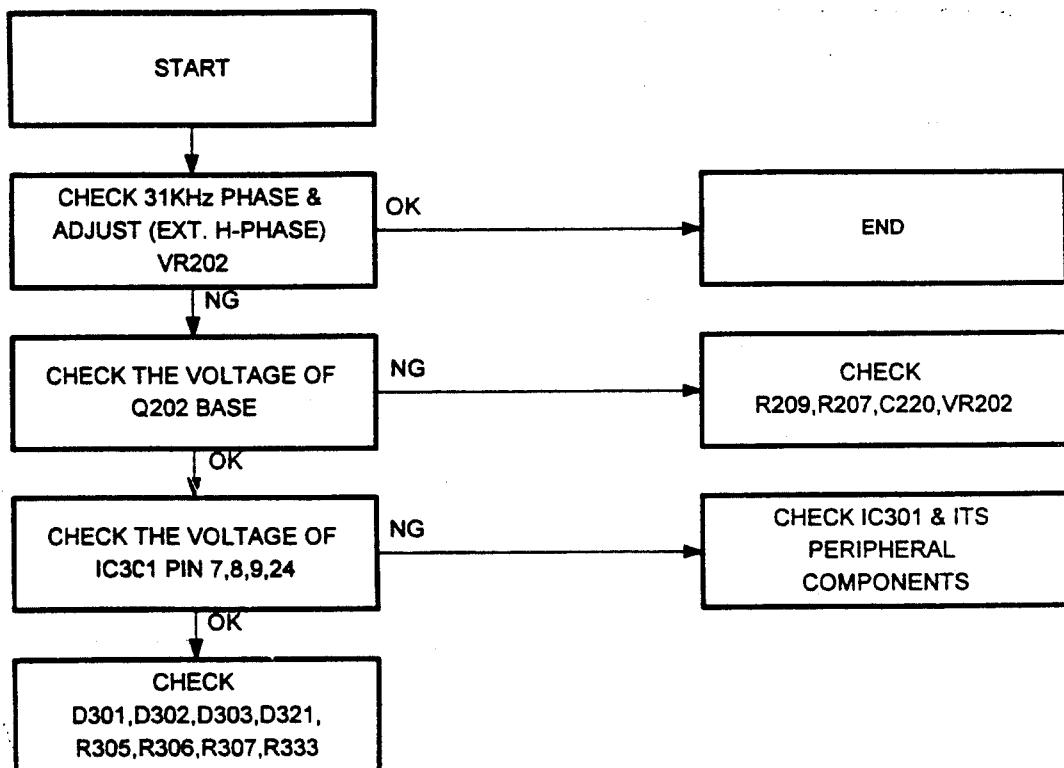
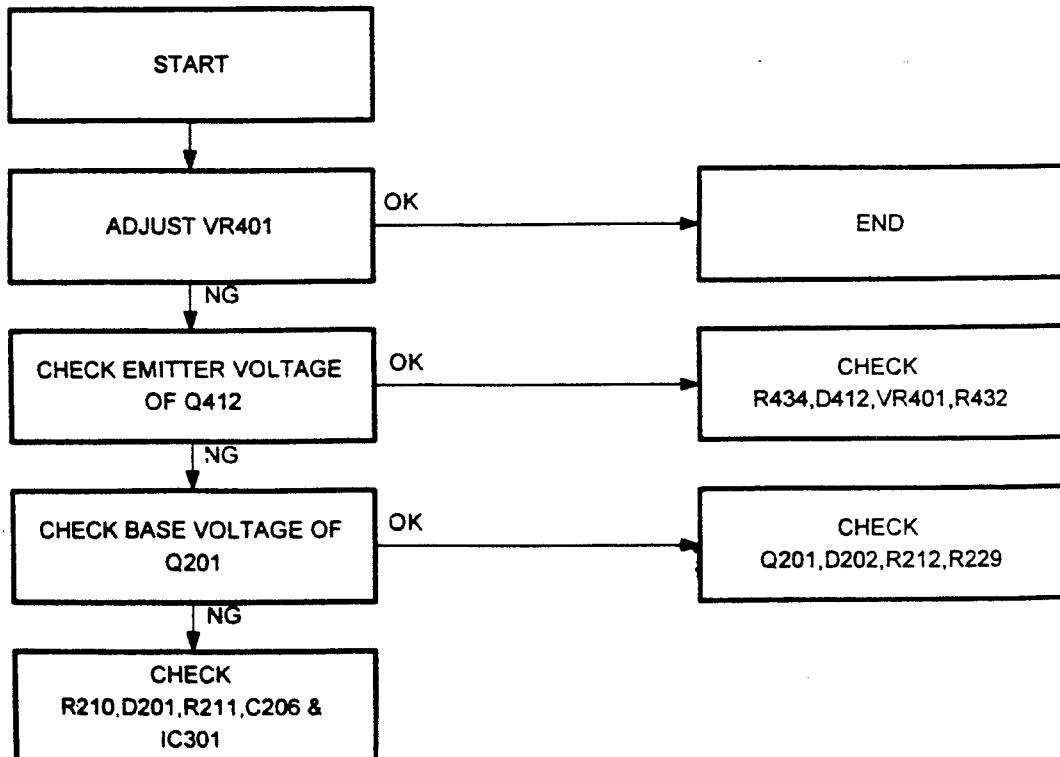
## 6.5 DEFLECTION CIRCUIT TROUBLESHOOTING ROUTINE

### 6.5.1 Horizontal Deflection Circuit

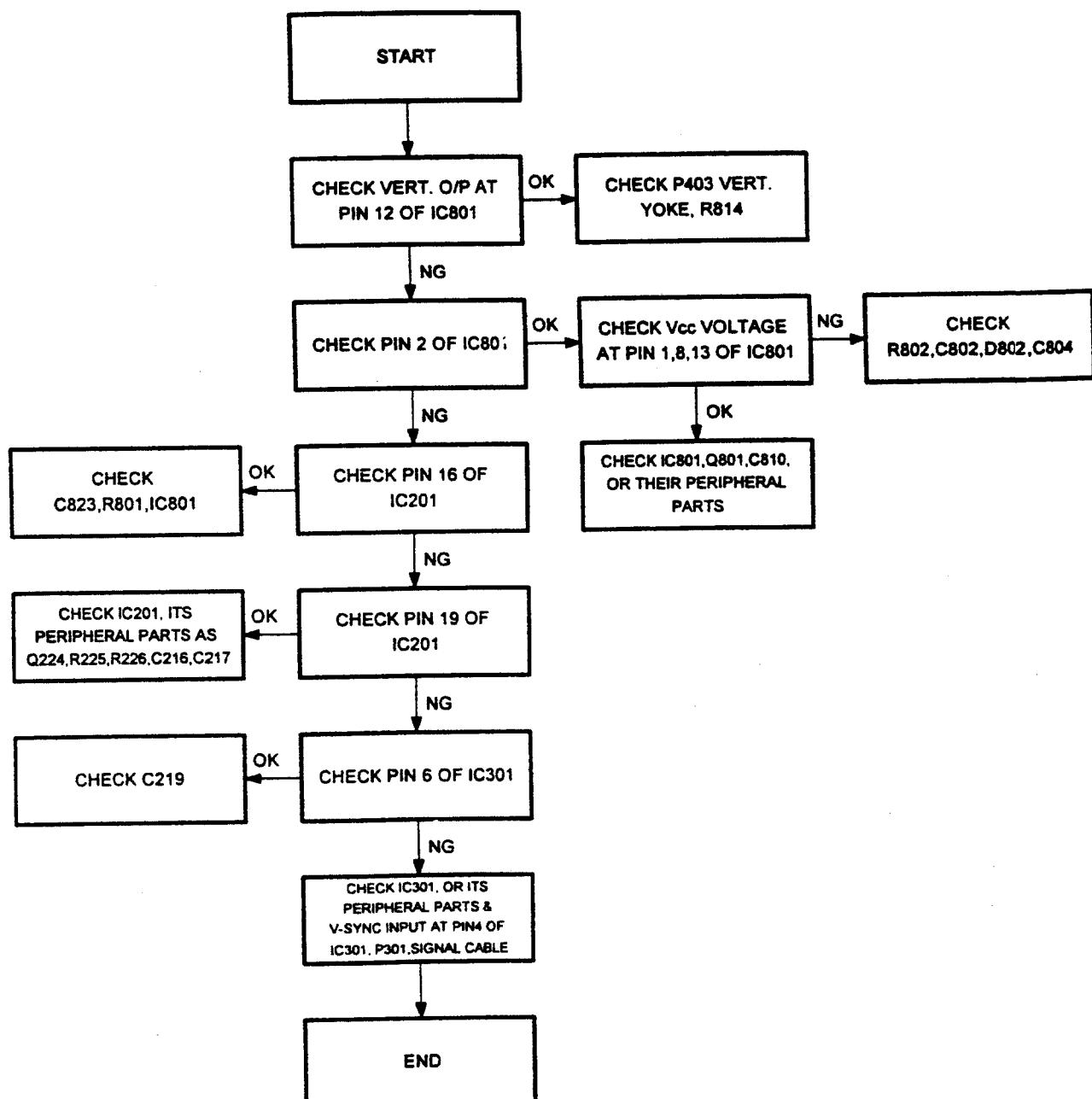


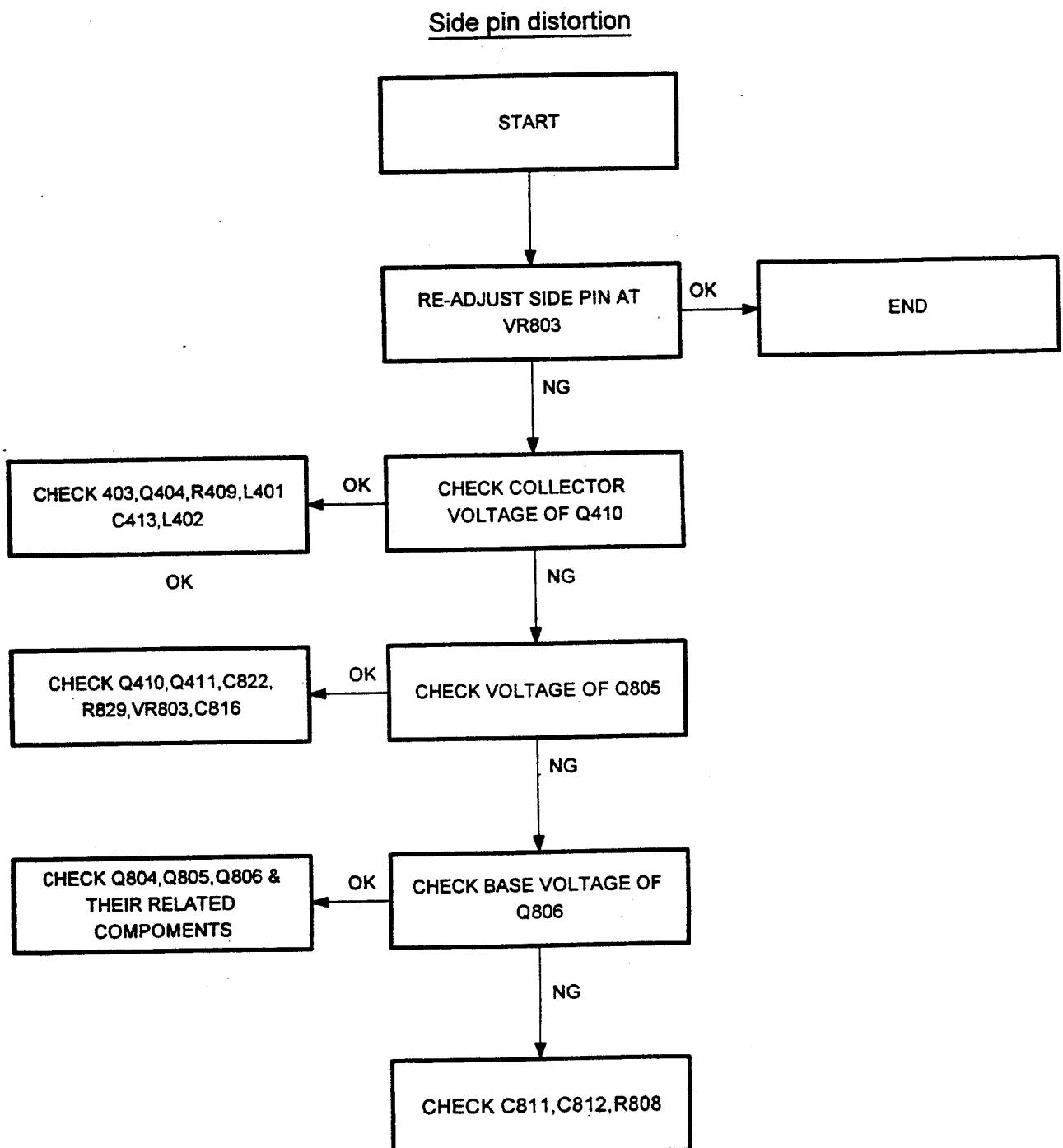
H-Asynchronous

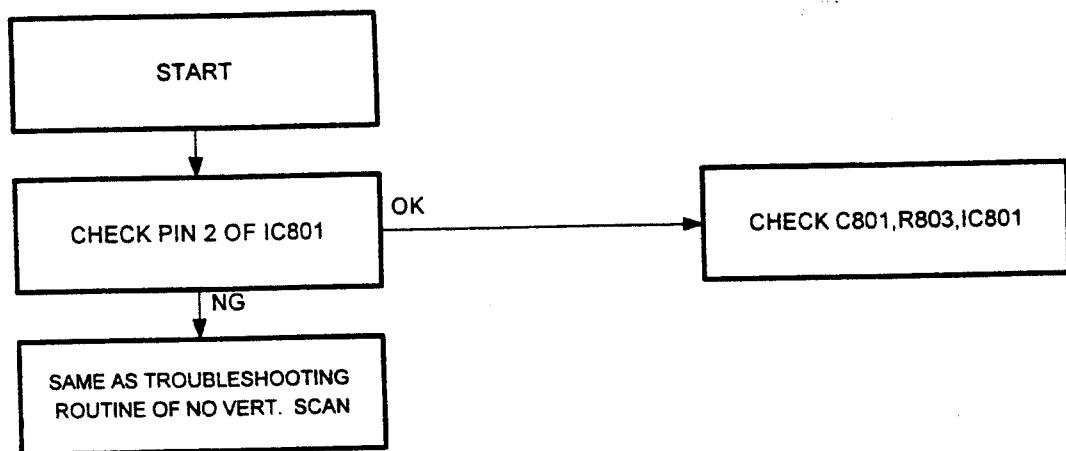
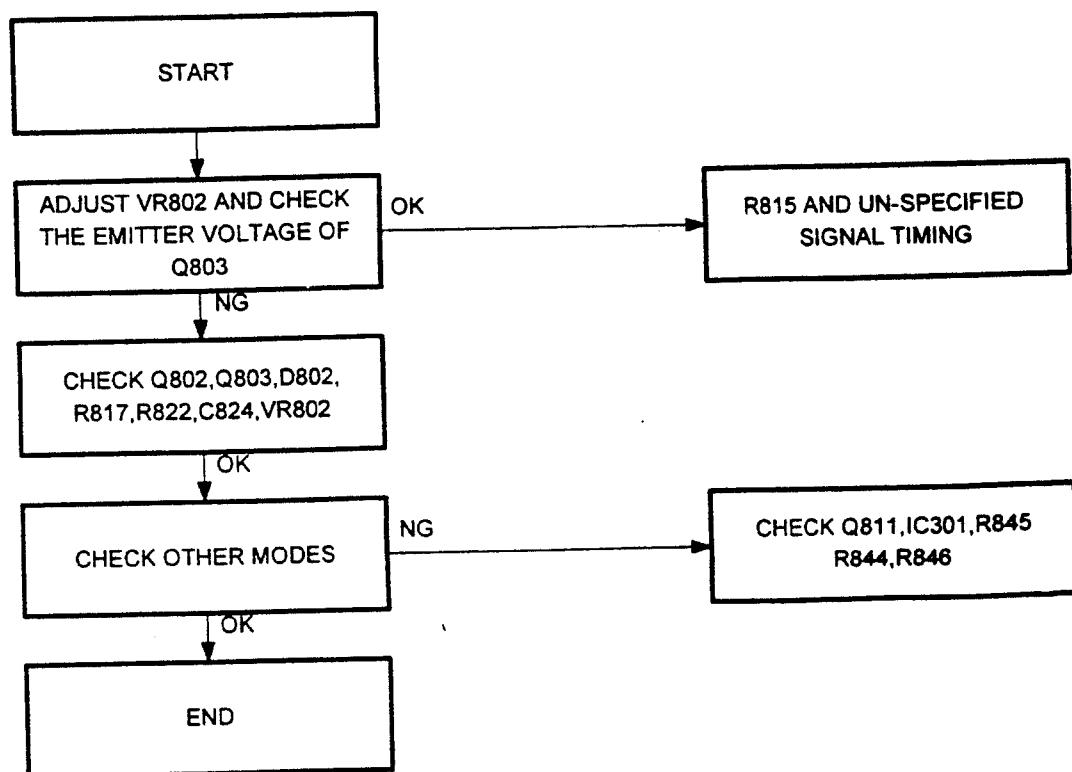
Linearity

Out of phaseWidth Abnormal

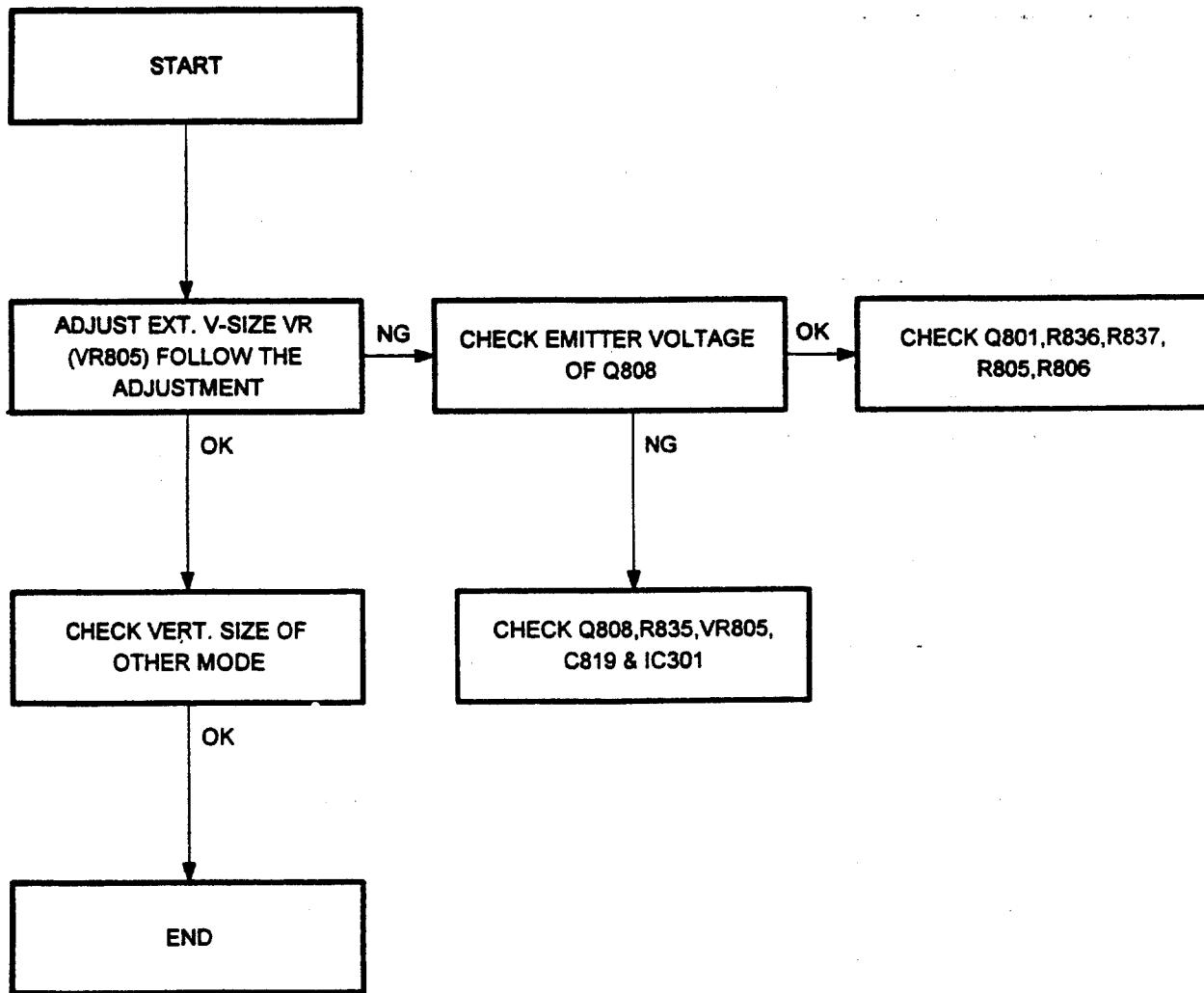
## 6.5.2 Vertical Deflection Circuit

No vertical scan



V-AsynchronousVertical position

REMARK: fH horizontal frequency

Vertical Size

The following voltage records were measured with cross-hatch pattern.

Transistor

Unit: volt

TR	Q201 (2SC733)			Q202 (2SA733)			Q301 (2SC945)		
PIN	B	C	E	B	C	E	B	C	E
MODE									
8514NI	11.35	0.0	11.61	1.93	GND	2.58	5.08	23.41	4.67
SVGA II	8.82	GND	9.44	1.95	GND	2.60	5.08	23.44	4.66
8514A	8.29	GND	8.91	2.19	GND	2.82	5.07	23.41	4.65
VGA-350	7.38	GND	8.01	2.32	GND	2.96	5.08	23.21	4.68

TR	Q401 (BU2508AF)			Q402 (2SK2134)			Q403 (2SD313)		
PIN	G	D	S	G	D	S	B	C	E
MODE									
8514NI	-0.25	148.30	GND	22.46	48.3	21.58	0.55	15.83	0.0
SVGA II	-0.32	112.28	GND	12.55	21.74	11.89	0.54	11.82	GND
8514A	-0.33	104.47	GND	12.38	31.6	11.72	0.53	14.56	GND
VGA-350	-0.33	91.22	GND	21.80	11.03	10.99	0.53	10.96	GND

TR	Q404 (2SA733)			Q405 (BF423)			Q406 (2SC2688)		
PIN	B	C	E	B	C	E	B	C	E
MODE									
8514NI	15.75	0.55	15.83	15.83	147.95	5.17	148.58	76.29	GND
SVGA II	11.62	0.57	11.82	11.82	11.49	3.75	112.13	74.08	GND
8514A	14.52	0.53	14.44	14.44	103.42	3.28	104.05	74.08	GND
VGA-350	10.88	0.53	10.96	10.96	90.35	2.87	90.97	75.83	GND

TR	Q407 (2SK2134)			Q408 (BF423)			Q410 (BF423)		
PIN	G	D	S	B	C	E	B	C	E
MODE									
8514NI	22.21	47.62	21.69	1.58	-1.97	2.34	77.29	21.5	78.25
SVGA II	21.91	11.71	11.61	1.53	-2.07	2.28	57.88	11.24	58.75
8514A	24.88	14.72	14.70	1.54	-3.77	2.29	53.68	14.68	54.53
VGA-350	21.28	11.0	10.95	1.50	-2.55	2.25	46.88	10.82	47.7

TR	Q411 (BF422)			Q412 (2SA733)			Q501 (2SK2134)		
PIN	B	C	E	B	C	E	G	D	S
MODE									
8514NI	9.75	29.66	9.13	11.08	GND	11.63	4.0	59.71	0.12
SVGA II	7.85	29.83	7.22	9.02	GND	9.66	2.85	59.86	0.08
8514A	7.46	28.80	6.83	8.51	GND	9.15	2.56	59.92	0.07
VGA-350	6.8	24.77	6.16	7.69	GND	8.33	2.09	59.96	0.05

TR	Q502 (FB422)			Q503 (2SC945)			Q801 (2SC945)		
PIN MODE	B	C	E	B	C	E	B	C	E
8514NI	2.96	107.22	2.43	0.67	0.01	GND	2.86	6.02	2.34
SVGA II	2.22	82.19	1.70	0.67	0.01	GND	2.86	6.03	2.34
8514A	2.06	76.69	1.54	0.67	0.01	GND	3.99	5.99	3.44
VGA-350	1.8	67.85	1.28	0.67	0.01	GND	3.83	6.02	3.30

TR	Q802 (2SC945)			Q803 (2SA733)			Q804 (2SC945)		
PIN MODE	B	C	E	B	C	E	B	C	E
8514NI	11.3	23.54	11.4	10.75	GND	11.4	6.14	18.17	5.54
SVGA II	11.26	23.46	11.37	10.72	GND	11.37	6.13	18.16	5.52
8514A	11.24	23.41	11.34	10.61	GND	11.34	6.14	18.16	5.55
VGA-350	11.16	23.23	11.24	10.61	GND	11.25	6.14	18.16	5.55

TR	Q805 (2SA733)			Q806 (2SA733)			Q808 (2SA733)		
PIN MODE	B	C	E	B	C	E	B	C	E
8514NI	6.15	15.02	5.53	4.37	GND	5.01	2.18	GND	2.86
SVGA II	6.14	15.42	5.52	4.35	GND	5.0	2.18	GND	2.87
8514A	6.17	14.01	5.55	4.36	GND	5.01	3.28	GND	3.96
VGA-350	6.17	14.14	5.55	4.37	GND	5	3.15	GND	3.83

TR	Q809 (2SA733)			Q810 (2SC945)			Q811 (2SA733)		
PIN MODE	B	C	E	B	C	E	B	C	E
8514NI	5.2	GND	5.71	0.73	0.32	GND	23.43	12.89	23.43
SVGA II	3.76	GND	4.32	0.73	0.32	GND	23.47	12.92	23.46
8514A	3.29	GND	3.85	0.72	0.41	GND	23.42	12.87	23.41
VGA-350	2.87	GND	3.44	0.72	0.36	GND	23.23	12.63	23.24

## Integration Circuit

IC	IC201 (7851)									
PIN MODE	1	2	3	4	5	6	7	8	9	10
VGA-350	7.94	8.42	8.6	-0.3	4.22	3.57	6.81	6.59	6.4	12.31
PIN MODE	11	12	13	14	15	16	17	18	19	20
VGA-350	7.09	4.36	0.0	GND	NG	3.60	0.21	3.19	6.04	12.32

## Integration Circuit

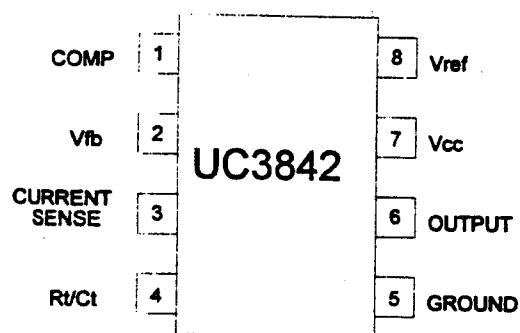
IC		IC301 (7851)						
PIN	1	2	3	4	5	6	7	
MODE								
8514NI	2.33	2.41	3.08	3.36	0.47	0.04	0.17	
SVGA II	2.33	2.41	0.57	0.2	0.6	0.03	11.46	
8514A	2.33	2.41	0.63	0.23	0.67	0.07	11.45	
VGA-350	2.33	2.41	0.57	3.38	0.59	0.02	11.45	
PIN	8	9	10	11	12	13	14	
MODE								
8514NI	0.09	0.14	1.43	3.48	GND	0.7	3.12	
SVGA II	0.08	0.14	1.44	3.47	GND	0.77	3.12	
8514A	12.31	0.14	2.86	2.73	GND	0.75	3.12	
VGA-350	12.31	11.39	2.23	3.23	GND	0.6	3.12	
PIN	15	16	17	18	19	20	21	
MODE								
8514NI	3.12	0.74	2.29	11.06	2.1	2.07	2.07	
SVGA II	3.12	0.72	2.76	7.01	2.13	2.09	2.1	
8514A	3.1	0.63	2.9	6.23	3.08	3.07	3.08	
VGA-350	3.11	0.63	3.16	5.01	2.95	2.94	2.95	
PIN	22	23	24	25	26	27	28	
MODE								
8514NI	8.83	8.79	12.3	2.06	0.01	NC	5.08	
SVGA II	7.19	0.01	12.31	2.1	7.14	NC	5.08	
8514A	6.57	6.53	12.31	0.01	6.52	0.63	5.08	
VGA-350	6.10	6.07	12.30	2.94	6.07	NC	5.08	

IC		IC501 (UC3843)						
PIN	1	2	3	4	5	6	7	8
MODE								
8514NI	3.48	2.49	0.12	0.19	GND	4.06	12.32	4.99
SVGA II	3.34	2.49	0.08	0.3	GND	2.89	12.32	5.0
8514A	3.26	2.49	0.07	0.34	GND	2.57	12.32	5.0
VGA-350	3.13	2.49	0.05	0.41	GND	2.11	12.32	5.0

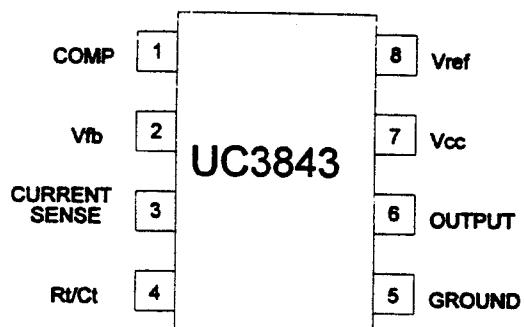
IC		IC801 (LA7837)											
PIN	1	2	3	4	5	6	7	8	9	10	11	12	13
MODE													
VGA-350	11.7	3.61	5.85	6.01	11.13	5.44	5.95	23.16	1.36	1.47	GND	12.85	23.0

## 7.0 IC CONFIGURATION

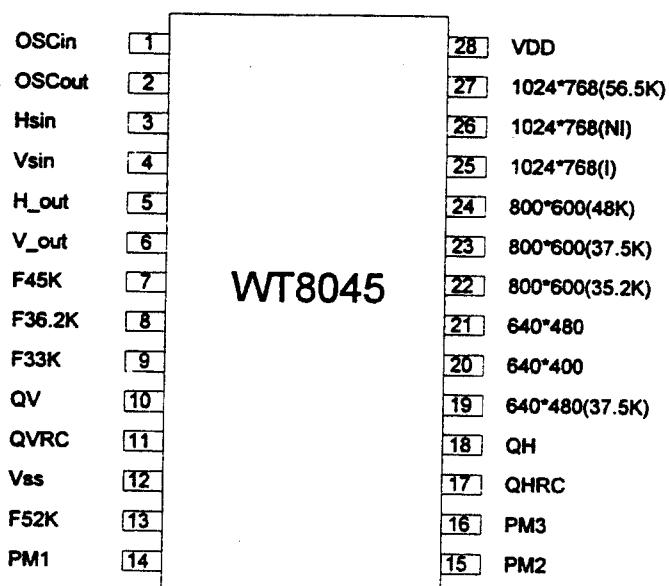
## 1. IC101 (3842)



## 2. IC501 (3843)



## 3. IC301 (WT8045)

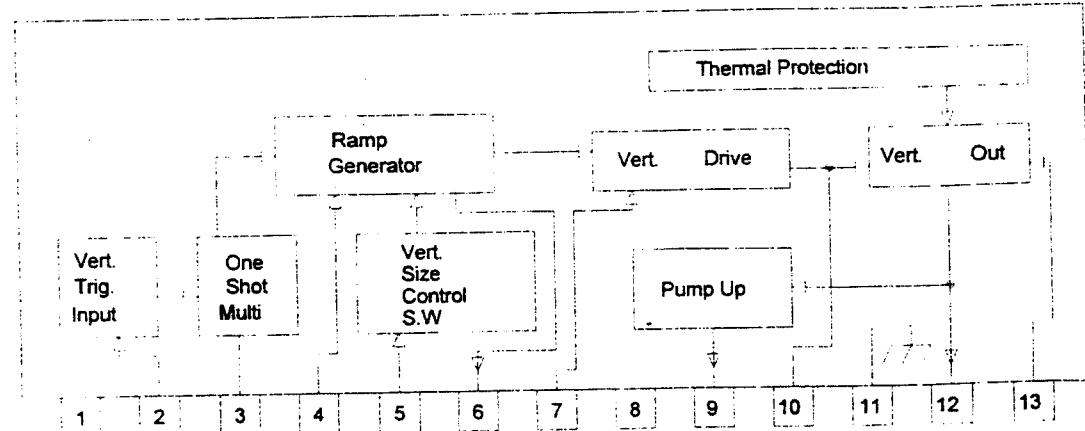


## 4. IC601(M51387P)

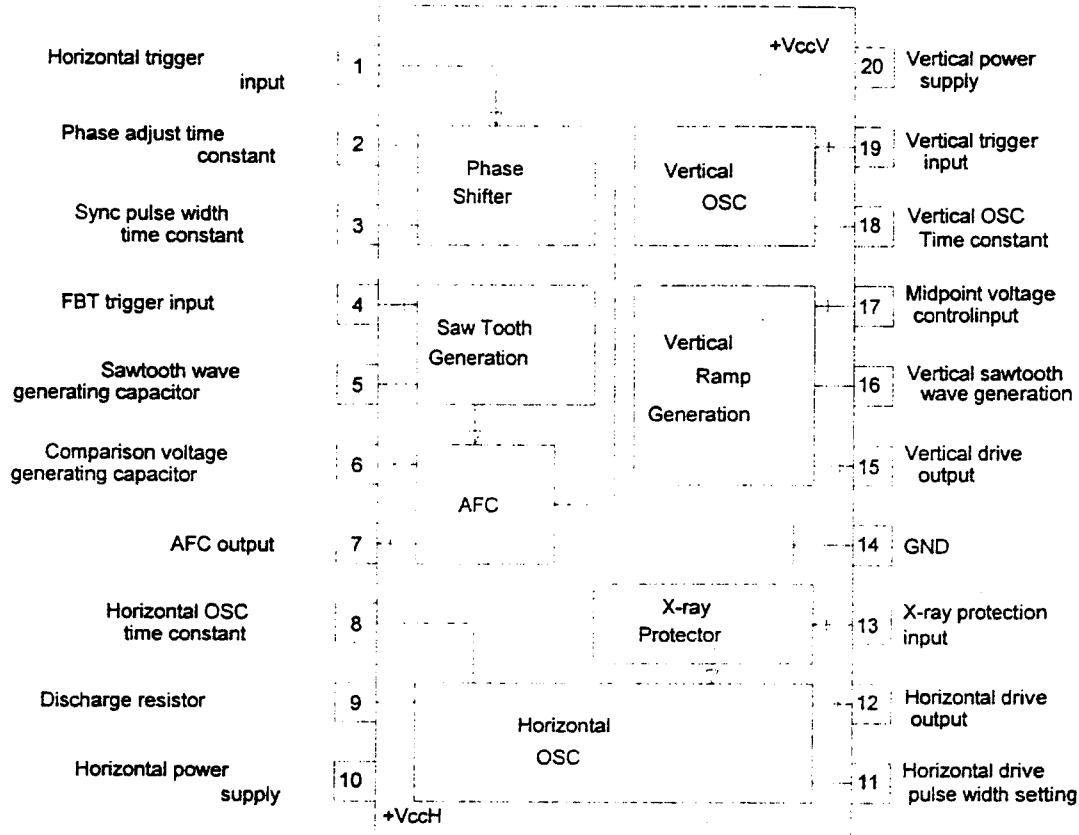
N.C.	1	30	WHITE PEAK CLIP
VCC (R)	2	29	OUTPUT (R)
INPUT (R)	3	28	HOLD (R)
SUB CONTRAST CONTROL (R)	4	27	SUB BRIGHT CONTROL (R)
PEAKING (R)	5	26	GND (R)
VCC (G)	6	25	OUTPUT (G)
INPUT (G)	7	24	HOLD (G)
SUB CONTRAST CONTROL (G)	8	23	SUB BRIGHT CONTROL (G)
PEAKING (G)	9	22	GND (G)
VCC (B)	10	21	OUTPUT (B)
INPUT (B)	11	20	HOLD (B)
SUB CONTRAST CONTROL (B)	12	19	SUB BRIGHT CONTROL (G)
PEAKING (B)	13	18	GND (B)
CONTRAST CONTROL	14	17	BLANKING PULSE
CLAMP PULSE	15	16	BRIGHT CONTROL

M51387P

## 5. IC801(LA7837)



## 6. IC201(LA7851)



## 8.0 LAYOUT FOR MAIN COMPONENTS AND ADJUSTED

## 9.0 CIRCUIT DIAGRAM

## 10.0 SPARE PARTS LIST &amp; TRANSISTOR PINS ARRANGEMENT

MAIN BOARD REV.B					
ITEM	PART NO.	DESCRIPTION	LOCATION	PIN'S ARRANGE	REMARK
1	17A06-150H	3842/17384	IC101		
2	17A06-140H	LA7851	IC201		
3	17A01-002M	8045	IC301		
4	17A06-190H	3843	IC501		
5	17A06-110H	LA7837	IC801		
6	15D67-F000	600V 4A PBL405	BD101		
7	49FB2-0A0B	250V 3.15A	F101		
8	14K22-0908	2SK2141	Q101	GDS	
9	14A92-021B	2SA733	Q102, Q116, Q201, Q202, Q404, Q412, Q803, Q806, Q808, Q809, Q811	ECB	
10	14A92-061E	BF423	Q405, Q408, Q410	ECB	
11	14C92-011E	BF422	Q411, Q502	ECB	
12	14C92-111B	2SC945	Q111, Q115, Q301, Q503, Q801, Q802, Q804, Q805, Q810	ECB	
13	14B26-030B	2SB772	Q110	ECB	
14	14C26-040B	2SC2688	Q406	ECB	
15	14K22-110B	2SK2134	Q402, Q407, Q501	GDS	
16	14D22-110C	2SD313	Q403	BCE	
17	14D26-0108	2SD882	Q114	ECB	
18	14C3P-140P	BU2508DF	Q401	BCE	
19	15S3C-601F	1500V 3A 3TH41	D402		
20	47F13-0420	FBT	T401		

CRT BOARD REV.B					
ITEM	PART NO.	DESCRIPTION	LOCATION	PIN'S ARRANGE	REMARK
1	17A04-020H	M51387P	IC601		
2	14C92-031E	PH2369	Q601, Q602, Q603	CBE	
3	14A26-100C	2SC3788	Q604, Q605, Q606	ECB	

## 11.0 CRT CONTRAST LIST

THE 1451C SERIES MONITOR HAVE SEVERAL KINDS OF CRT AS LIST.  
THE DIFFERENT PARTS BETWEEN THEM HAVE BEEN SHOWN IN FOLLOW.

LR

PARTS	TYPE	HITACHI 20H14-026A	CHUNGHWA 20H14-106B	PANASONIC 20H14-116C	TOSHIBA 20H14-1561	SAMSUNG 20H14-276A
R330	24K 1/8W 23A11-243M	27K 1/8W 23A11-273M	24K 1/8W 23A11-243M	27K 1/8W 23A11-273M	24K 1/8W 23A11-243M	
R433	15K 1/4W 22225-153M	16K 1/4W 22225-163M	15K 1/4W 22225-153M	15K 1/4W 22225-153M	15K 1/4W 22225-153M	
R434	4.3K 1/4W 22225-432M	5.1K 1/4W 22225-512M	4.3K 1/4W 22225-432M	5.1K 1/4W 22225-512M	5.1K 1/4W 22225-512M	
R508	30K 1/4W 22225-303M	30K 1/4W 22225-303M	30K 1/4W 22225-303M	30K 1/4W 22225-303M	36K 1/4W 22225-363M	
R805	110K 1/4W 22225-114M	110K 1/4W 22225-114M	100K 1/4W 22225-104M	110K 1/4W 22225-114M	110K 1/4W 22225-114M	
R807	39K 1/8W 22215-393M					
R808	4.7K 1/8W 22215-472M					
C823	0.01 $\mu$ 39146-103R					
JUMP WIRE	J51	J51	J52	J52	J52	
DEGAUSSING COIL	46G00-0059	46G00-0059	46G00-0063	46G00-0059	46G00-0063	

NORMAL

PARTS	TYPE	HITACHI 20H14-0263	GOLDSTAR 20H14-2460	ORION 20H14-2660	MITSUBISHI 20H14-1860	CHUNGHWA 20H14-1061
R433	16K 1/4W 22225-163M	16K 1/4W 22225-163M	15K 1/4W 22225-153M	18K 1/4W 22225-183M	16K 1/4W 22225-163M	
R434	5.1K 1/4W 22225-512M	5.1K 1/4W 22225-512M	5.1K 1/4W 22225-512M	5.6K 1/4W 22225-562M	4.7K 1/4W 22225-472M	
R508	39K 1/4W 22225-393M	36K 1/4W 22225-363M	36K 1/4W 22225-363M	30K 1/4W 22225-303M	36K 1/4W 22225-363M	
R805	75K 1/4W 22225-753M	68K 1/4W 22225-683M	75K 1/4W 22225-753M	110K 1/4W 22225-114M	75K 1/4W 22225-753M	
R807	39K 1/8W 22215-393M	DELETE	DELETE	39K 1/8W 22215-393M	DELETE	
R808	4.7K 1/8W 22215-472M	5.1K 1/8W 22215-512M	5.1K 1/8W 22215-512M	4.7K 1/8W 22215-472M	4.7K 1/8W 22215-472M	
C823	0.01 $\mu$ 39146-103R	0.01 $\mu$ 39146-103R	0.01 $\mu$ 39146-103R	0.01 $\mu$ 39146-103R	0.01 $\mu$ 39146-103R	
R803	47K 1/8W 22215-473M	120K 1/8W 22215-124M	120K 1/8W 22215-124M	120K 1/8W 22215-124M	120K 1/8W 22215-124M	
R809	270 $\Omega$ 1/8W 22215-271M	82 $\Omega$ 1/8W 22215-820M	82 $\Omega$ 1/8W 22215-820M	82 $\Omega$ 1/8W 22215-820M	82 $\Omega$ 1/8W 22215-820M	
C801	6800P 31115-682R	1000P 31115-102R	1000P 31115-102R	1000P 31115-102R	1000P 31115-102R	
C807	10P 38196-100R	DELETE	DELETE	DELETE	DELETE	

